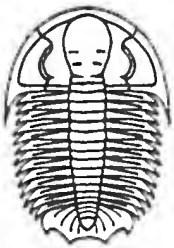
THE FOSSIL COLLECTOR



BULLETIN Nº13 JUNE 1984

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THE FOSSIL COLLECTORS ASSOCIATION OF AUSTRALASIA

EDITORIAL

Comments made in the January 1984 Editorial about the "touching up" of fossil specimens to make them more saleable, prompted one of our members to write about extremely well produced fakes he has discovered during the last few years, while acquiring overseas material for his collection. These include "Insects in amber" supposedly from both the Baltic and Mexico and slabs of rock showing reptile and amphibian trackways. In addition he has found metal traces at points of pressure flaking on American Indian and European artifacts (stone hand tools). While such occurrences are the exception rather than the rule it is hoped that publicity and constant vigilance by all collectors will act as a deterrent.

Modern techniques which permit exact copies of rare fossil specimens to be reproduced for scientific study, while perfectly legitimate when so labelled, no doubt present a great temptation to the unscrupulous trader, be he professional or amateur.

Another matter of some concern which has been highlighted by one of our American friends in a frank article entitled "The United States Collector" (Page 5), is the search by many amateurs for"99% complete invertebrate fossils" with no regard for the possible scientific value of the material they find and often destroy, in the process of acquiring that perfect display specimen. One collector wrote that he was not interested in moulds (having received some good trilobite specimens), only the casts. The fact that the external mould usually bears most of the fine detail required for description and recognition, while the cast is often only of the inside/underside of a shell or exoskeleton, was obviously of little consequence in his search for display material. Maybe mineral replacement of the cavity left in the rock by the shell or exoskeleton is considerably more common overseas than it is in this Country, at least in the more easily attainable and thus exchangeable fossil specimens.

We all want good specimens, be it for display or study but let us hope that organisations such as ours throughout the world will continue to strive for a more scientific approach to collecting by our members even if it is only to recognise unusual and possibly undescribed material which can then be brought to the attention of professional palaeontologists.

As you can see from our financial report, the F.C.A.A. entered this financial year with a healthy bank balance. The annual

meeting of members at the Mt. Isa Gemboree agreed that our Association should use any excess funds for the purpose of furthering scientific research or education in a field of palaeontology, rather than provide a perpetual trophy for the winners of Gemboree Competitions as had been proposed.

With this in mind we would welcome information from members about projects being planned or carried out by Museums and Universities etc., who would benefit from such a donation. Naturally the amount will not be very large as we are a non-profit making concern with very limited sources of revenue, however we have in the past been able to make two $50 donations, one to the Museum of Victoria and one to the University of New South Wales.

Frank Holmes.

FINANCES

As advised in Bulletin No.11 the end of the financial year has been changed from 31st December to the last day of February. Consequently the following Income and Expenditure statement covers the 14 month period from 1st January 1983 to 29th February 1984 and includes the cost of publishing four Bulletins.

INCOME		EXPENDITURE	
Subscriptions	$813.00	Postage	$446.82
Advance Subs.1984	433.00	Printing	293.18
Overpaid Subs.	6.00	Photo copies &	
Donations	9.45	Photo screening	93.71
Advertising	2.50	Stationery	94.43
Bank Interest	17.73	Sundries	85.94
Sale of Bulletins	104.36	Refund O/P Sub'n.	3.00
Sale of Car Stickers	66.00	Sub'n to FOGAMM	20.00
		Tax (Chg.account)	1.11
Total	$1452.04	Total	$1038.19

Balance of Income over Expenditure 1983/4	$413.85
Add cash brought forward from 1982	478.93
Credit balance 29th February, 1984	$ 892.78

The above credit balance includes advance subscriptions. Because of the extended financial year no detailed comparison can be made with the previous year's figures, however allowing for the cost of the 4th Bulletin, the improvement over a 12 month period would have been in the vicinity of $227-00.

LIBRARY CORNER (including Book Reviews)

VERTEBRATE ZOOGEOGRAPHY & EVOLUTION IN AUSTRALASIA
(Animals in Space and Time)
Edited by Michael Archer and Georgina Clayton.

This comprehensive book about the evolution and distribution of Australasian animals has been written and compiled to serve audiences ranging from interested amateurs, to High School and University classes as well as the professionals.

Its basic aim is to present, in a world context, up-to-date as well as original ideas about the effect of biological and geological history and similar factors on the present distributions of Australasia's extraordinary vertebrates.

Illustrated with 24 colour plates and many hundreds of figures, diagrams and graphs., the book also contains many light-hearted drawings by zoological cartoonist Colin Stahal and numerous reconstructions by artist Peter Schouten.

The book includes sections on Zoogeography, Fish, Amphibians, Reptiles, Birds, Mammals and New Zealand, New Guinea and Lord Howe Island. Each section on specific vertebrate groups contain a checklist and bibliography of Australian fossil species.

Unfortunately, we understand the book is only available from the publishers Hesperian Press of 65, Oats Street, Carlisle, Western Australia, 6101.

Soft cover $35.00 and hard cover $44.00 both plus postage at the "over 2 kg, up to 5 kg."rate

ANCIENT AUSTRALIA, The Story of its Past Geography and Life by Charles F. Laseron (Third Edition). Revised by Rudolf O. Brunnschweiler.

Published by Angus and Robertson 1984.
Recommended Retail Price : $34.95.

This, the third edition of Laseron's Ancient Australia, originally published in 1954, incorporates the latest developments and discoveries in the field of palaeontology.

The original form of the book has been followed in relating the story of the ever changing form of Australia and the living

organisms which evolved from the origins of the continent several billion years ago to the present day. While this valuable source of information on the palaeontological aspects of Australia's Geological history does not contain "exact" locations of fossil beds, it does however list by geological period all the main types of prehistoric flora and fauna which exist on this continent and the various sequences in which they are found. This latter information used intelligently can be of considerable assistance to anyone planning an interstate collecting trip.

Although the book is primarily addressed to the Australian layman, amateur naturalist and student, it is eminently suitable for overseas professionals and amateurs alike who want to learn about Australian palaeontology and geology.

The photographs and maps are similar to those published in previous editions, however the type setting of the plate descriptions has been considerably improved (the early editions were difficult to follow). Inclusion of geographic co-ordinates for localities mentioned in the text and a bibliography of pertinent studies up to mid 1979 also improve the usefulness of the book.

If there is to be any criticism it is in the standard of the photographs, which although not bad do not do justice to the text, particularly as the book appears somewhat overpriced at $34.95. However, a look at my library shows that Edition 1 cost 16/6d ($1.65) in the 1950's and Edition 2, $7.50 in 1969. On that basis perhaps the cost only represents the last 15 years inflation. (NOTE:If Edition 4 is published in 1999 it should cost approx. $157.50!)

Frank Holmes

THE UNITED STATES COLLECTOR

From time to time we hear of problems emanating from the exchange of fossils between Australian and United States collectors, particularly in the relation to the quality and completeness of Australian specimens.

In explaining the attitudes of many United States collectors, Gil. Norris of Rock Island, Illinois has written to say :-

"We may well be spoiled by the quality and quantity of fossils to be found throughout the United States. Our

Cont...

THE UNITED STATES COLLECTOR (Cont'd)

interstate highway system which covers the entire country enables us to travel in excess of 1000 kms in one day stopping only for food and fuel. Consequently from my home in Illinois it is possible to make trips of comparatively short duration to sites as diverse as the South Dakota Badlands with their Oligocene vertebrate fossils and Pierre Shale ammonites; the Carboniferous fossils from West Virginia to Kansas; Devonian locations in New York, Ohio, Michigan and Iowa; the Cretaceous beds of Texas; and the famous Crawfordsville crinoids from Indiana as well as extensive Silurian and Ordovician localities. Besides this our contact with European collectors over many years has allowed us to acquire their fine Jurassic, Cretaceous and Cenozoic fossils.
Because of this availability of museum quality specimens it is no wonder that only 99% complete invertebrate fossils are acceptable to U.S. collectors. It is IMPOSSIBLE to sell or trade trilobite PARTS, the only people wanting such material being research workers.

A major factor influencing collecting and trading is specialization. Collectors in the mid-west may specialize in crinoids or in trilobites while in other parts of the country Cenozoic material may be considered the thing to collect.

Our judgement is further distorted when we visit shows and find dealers with only prime quality overseas fossils giving us the impression that such fossils are common. We tend to forget that for every fossil WE bring home we LEFT a hundred behind at the site as not worth bringing home.

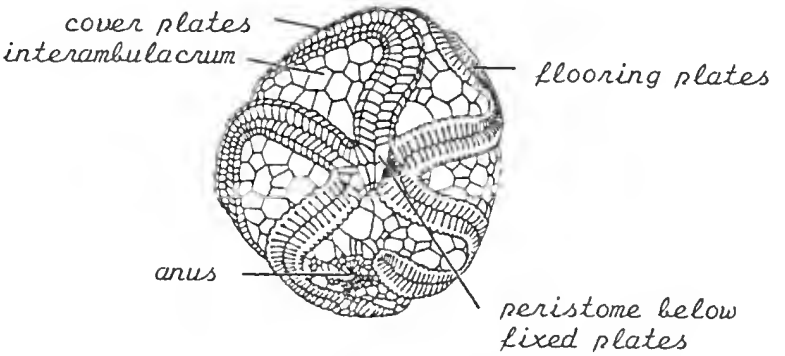
I agree that this extreme emphasis on complete fossils while ignoring scientifically valuable specimens is a very negative attitude for the United States collector to take, but it IS very hard to become interested in a specific fossil, when our fellow collectors don't want them."

The above article was written by Gil. in the hope that overseas collectors may better understand the reality of fossil trading in the United States of America.

EDRIOASTEROIDS AND THEIR KNOWN RECORD IN AUSTRALIA

The Edrioasteroidea are a small extinct group of Palaeozoic echinoderms (Early Cambrian to Early Carboniferous) with five distinct ambulacral and five interambulacral areas confined to the upper (adoral) surface and leading to a central mouth. Most edrioasteroids are flattened and discoidal however, some are globular or elongated.

Probably the most commonly illustrated genus of this Class of echinoderms is Edrioaster, an Ordovician form with a flexible theca in which four of the sinuous ambulacra have an anti-clockwise twist while the fifth turns clockwise and curls around the excentric periproct (anus). A small hydropore near the mouth presumably led to the water-vascular system. Edrioaster like the majority of genera was discoidal.



Edrioaster bigsbyi, with cover plates removed from three ambulacra, xl, (Ord.), based on Kesling in 'Tretise' Part U.

The origin of these extinct creatures is unknown although the aboral features that they share with early crinozoans seem to suggest a common origin. A superficial resemblance to the Pre-Cambrian Tribrachidium (Ediacarian fauna) has often been noted though this may be no more than coincidental (Clarkson 1979).

The earliest known edrioasteroid Stromatocystites (Early to Middle Cambrian) is among the oldest of all recorded echinoderms, although the Class did not reach its peak until the Middle Ordovician.

Some genera were free-living but most were permanently fixed by the marginal ring to the substrate or in some cases to

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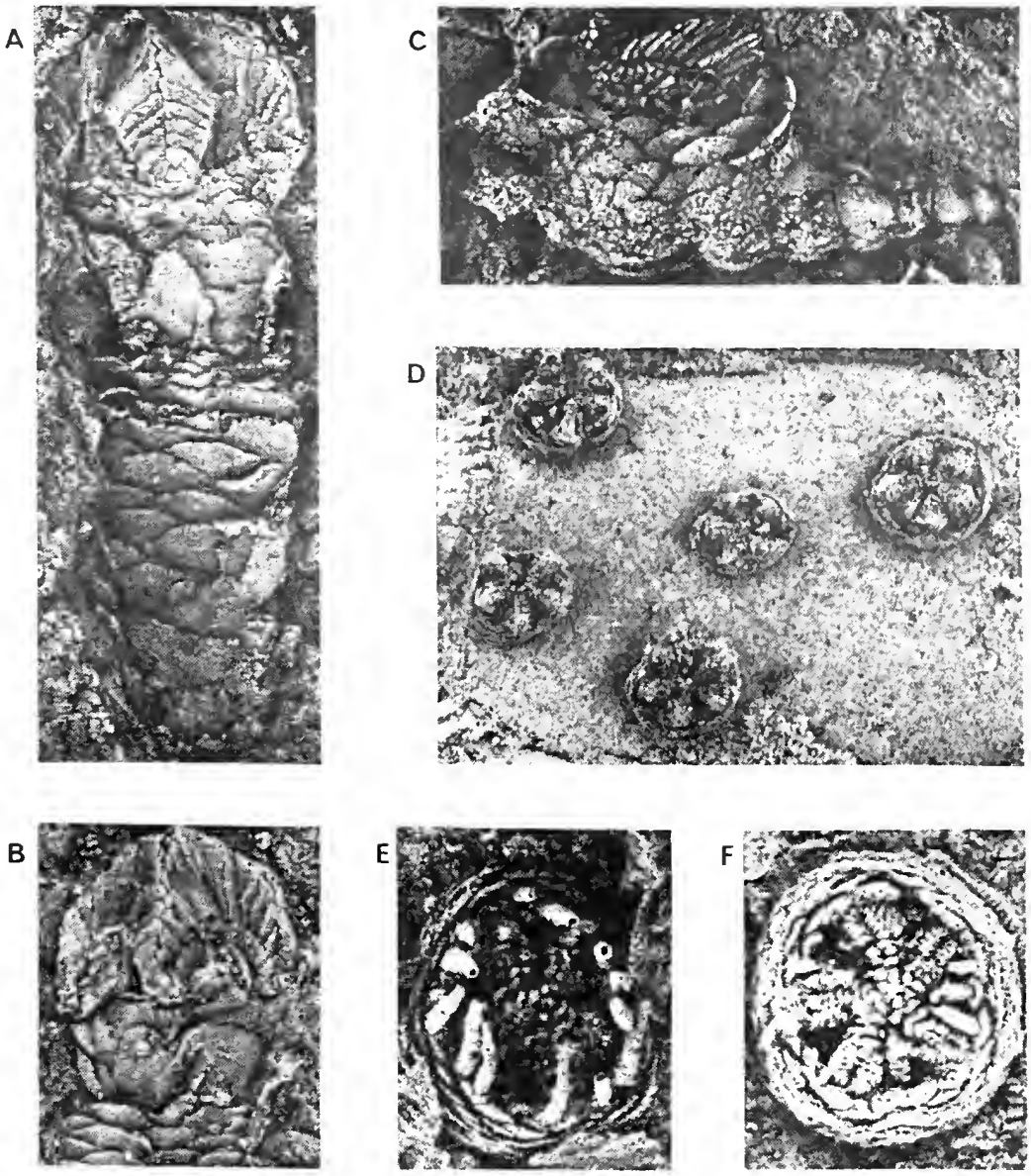
EDRIOASTEROIDS AND THEIR KNOWN RECORD IN AUSTRALIA (Cont'd)



A,B, *Rhenopyrgus whitei* n.sp. A, complete specimen, x3·5. B, disc and upper part of turret, x3·5.
C, Isorphida gen. et sp. indet., attached to a gastropod, x6.
D,E,F, *Epipaston ixine* n.gen.,n.sp. D, cluster of five individuals attached to a nautiloid, x2·4. E, oral view, x5·5. F, oral view, x4·5.

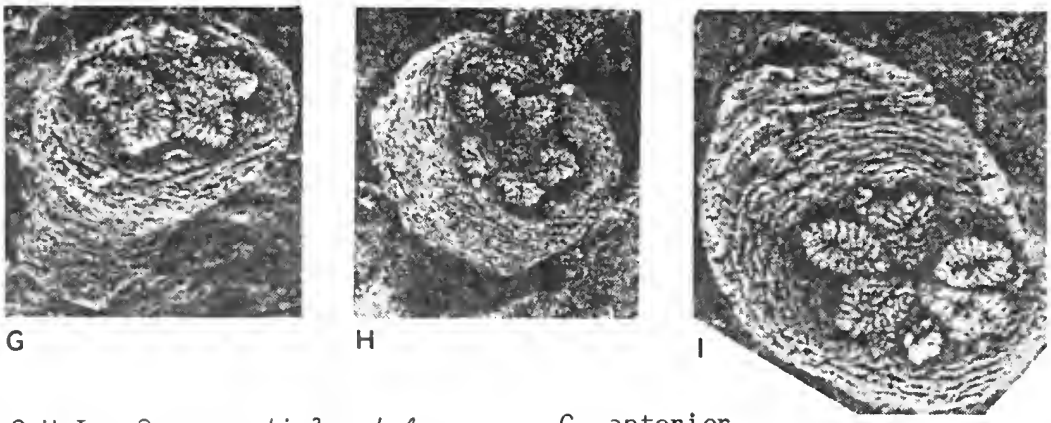
living shells. Elongated columnar forms such as Rhenopyrgus may have been permanently fixed insoft mud.

Until an article "Silurian and Devonian Edrioasteroids from Australia", by D.J.Holloway and P.A.Jell, was published in the Journal of Paleontology (September 1983), the only previously recorded edrioasteroid from this continent is a single specimen from the Upper Silurian near Clonbinane, Victoria, described by Philip in 1963.

Recent collecting within the Melbourne Trough (Central Victoria) resulted in the recovery of numerous specimens of edrioasteroids. These occur as internal and external moulds in Silurian and Devonian siltstones and sandstones of Ludlovian to Siegenian age.

The strata in which the specimens are found has been interpreted as a turbidite deposit (VandenBerg in VandenBerg and Garratt 1976). Unfortunately, because of the coarseness of the matrix, much of the fine morphological details have not been preserved however, it is interesting to note that some specimens are still attached to the shells of other animals on which they lived.

In all, five new species have been described; three being assigned to Northern Hemisphere genera, Rhenopyrgus whitei n.sp., Pyrgocystis? petalus n.sp., and Isorophus pannosus n.sp.; one, a new genus, Epipaston ixine n.gen.,n.sp., is unique among known edrioasteroids because of its long stout spines on proximal rim plates; and the fifth, which is

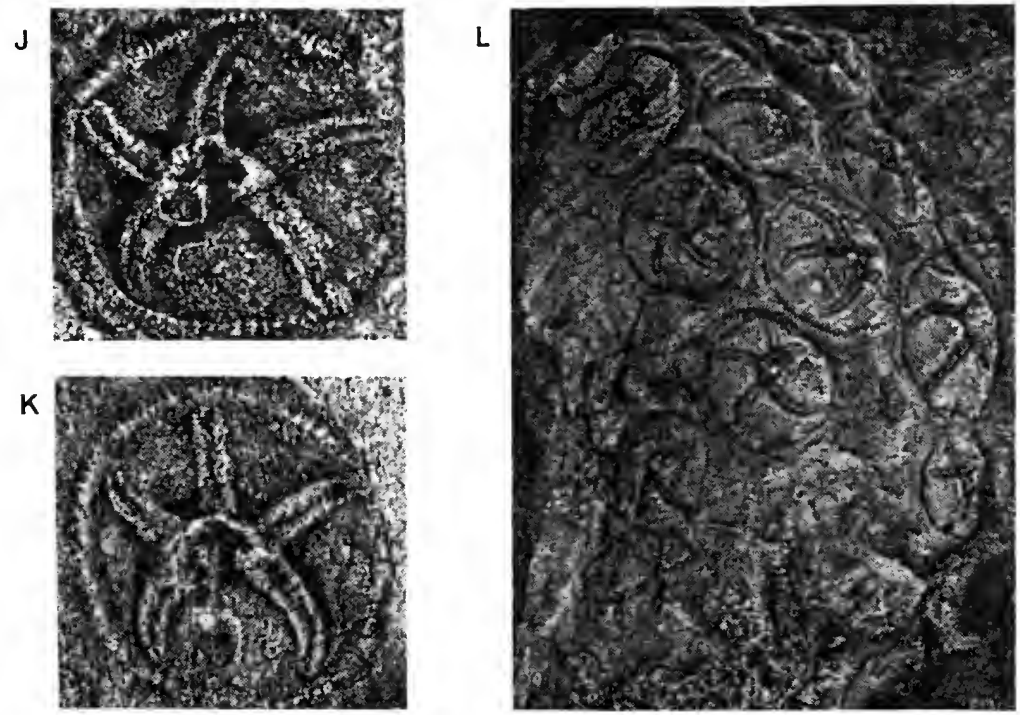


G H I

G,H,I, *Pyrgocystis? petalus* n.sp. G, anterior oblique view, x5. H,I, oral views x6 and x7 respectively

Cont...

EDRIOASTEROIDS AND THEIR KNOWN RECORD IN AUSTRALIA (Cont'd)



J,K,L, *Isorophus pannosus* n.sp. J,K, inner sides of oral surface x6·5. L, internal molds of oral surface x2·4.

(Dr. P.A.Jell kindly provided the photographs for this article.)

represented by only a single specimen, has not been assigned generically (Isorphida gen. et sp. indet.).

It is pleasing to note that members of our Association were able to assist this work on Australian edrioasteroids by donating specimens.

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QUESTION TIME

We have received several replies to Eric and Lilo Nowak's request for information on the fossil crustaceans from Darwin and Mackay (Bulletin 12:21) including the following note from Andrew C. Rozefelds which summarizes all the information available.

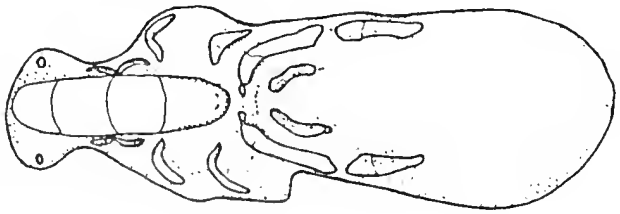
THE MUD LOBSTER (Thalassina squamifera de Man)

by A.C. Rozefelds.

Thalassina squamifera is the only species of this genus recorded from Australia. Early literature e.g.,(Etheridge and McCulloch, 1916) assigned sub-recent and modern material to the species T. anomala but Campbell and Woods (1970) have shown that the two species are distinct, although their ranges overlap in the Phillipines and Indonesia (Poore and Griffin, 1979). In Australia the living animal is known from much of Northern Coastal Australia extending in an arc from Gladstone in Eastern Queensland across the North to Port Hedland in Western Australia. Fossil records of this species overlap the modern distribution.

Mud lobsters occupy intertidal mangrove mudflats and have been found down to 13 m (Poore and Griffin, 1979). Macnae (1966) recorded the following additional information on the ecology of this species. "The burrows of T. squamifera are u-shaped, terminating in a large 'volcano-like' mound up to 75cm in height at one end. The other end of the tube opens into a shallow conical pool of water. The burrowing of the mud lobster leads to considerable reworking of sediments turning over the mud and sand of the mangrove forest floor."

There has been little research undertaken on dating sub-recent fossils of this type but generally the material is considered to be a few thousand years old .



Typical specimen of *Thalassina squamifera* x0·5.

Cont...

THE MUD LOBSTER (Cont'd)

ADDITIONAL READING

Campbell, B.M. and J.T. Woods, 1970 Palaeontological Papers 1967. Quaternary crustaceans from northern Australia in the collections of the Bureau of Min. Resources, Canberra. Bull. Bureau Min. Res. 108: 41-42.

Etheridge R., and A.R.McCulloch, 1916. "Sub-fossil Crustaceans from the Coasts of Australia" Rec. Aust. Mus. 11: 1-14.

Macnae, W. 1966. "Mangroves in Eastern and Southern Australia" Aust. J. Bot. 14: 67-104.

Poore, G.C.B. and Griffin, D.J.G. 1979. "The Thalassinidae (Crustacea Decapoda) of Australia. Rec. Aust. Mus. 32 (6): 217-321.

EDITOR'S NOTE

In addition to thanking Andrew Rozefelds for the above note we would like to thank George Kendrick, Western Australian Museum, for forwarding similar information.

BIVALVES (Part 2)

by G.W. Kendrick and L.C. Schekkerman.

On the following pages we continue with our illustrated synopsis of the Bivalvia. Part 1 of this article (Bulletin No.12, January 1984, Pages 7 to 16 incl.) concluded with illustrations of some genera from the Order Pterioida.

Further genera included in this Order are shown on the following pages, followed by genera from the Subclass Palaeoheterodonta, Orders Modiomorphoida, Unionoida and Trigonioida and Subclass Heterodonta, Order Veneroida.

Part 3 (conclusion) will be published in Bulletin No.14.

ORDER PTERIOIDA (Cont.)

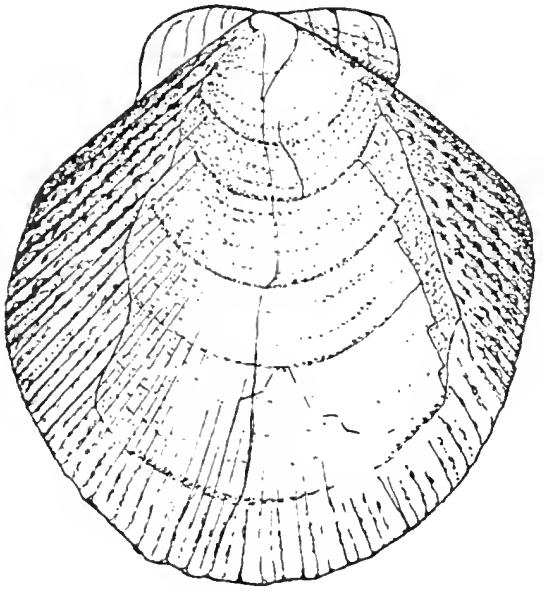


Fig.26. *Ctenioplewrium*, x3.5, Cret.

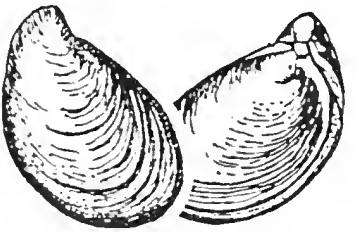


FIG.27. *Buchia*, x1, Juras.- Cret.

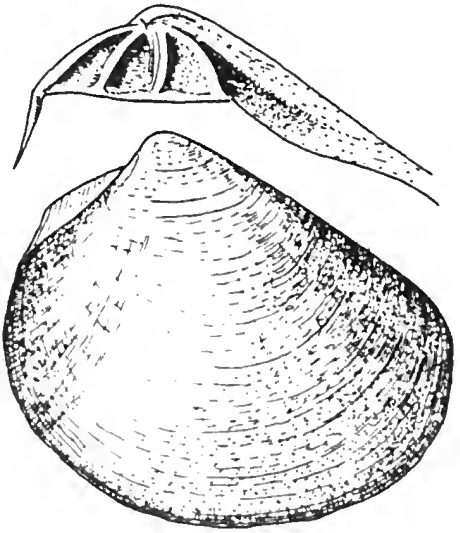


FIG.28. *Plagiostoma*, x0·7, Trias.- Cret.

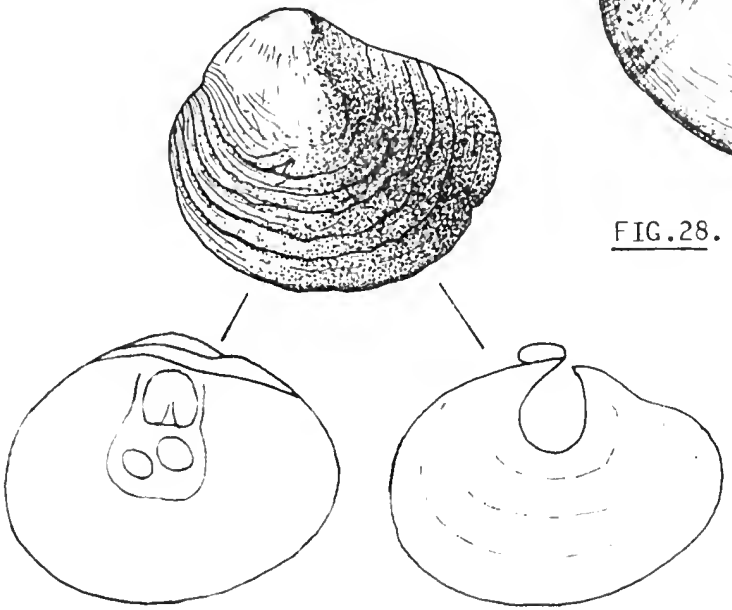


FIG.29. *Anomia*, x1, Cret.- Rec.

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BIVALVES (Cont.)

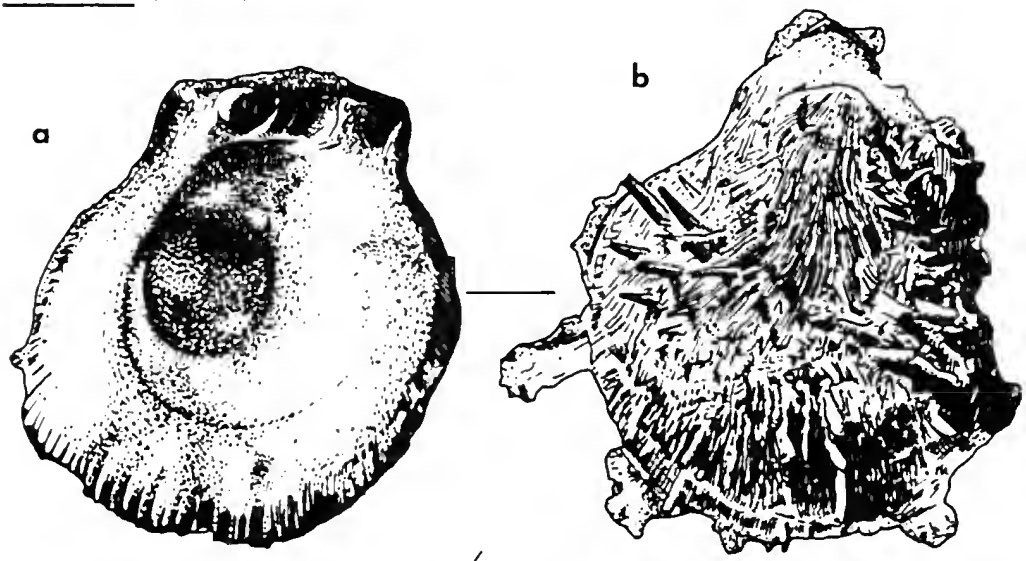
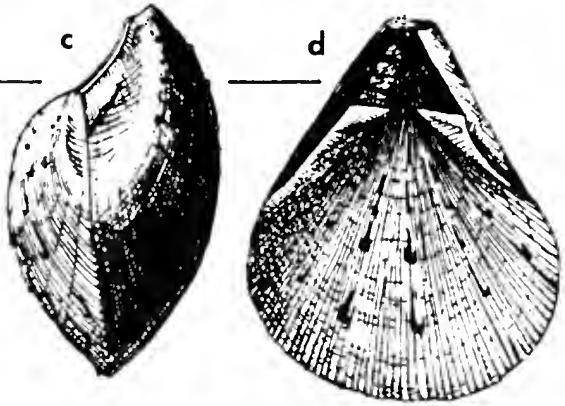


FIG.30. *Spondylus*,
Form A (a,b,) x1
Form B (c,d,) x0.7
Juras.- Recent



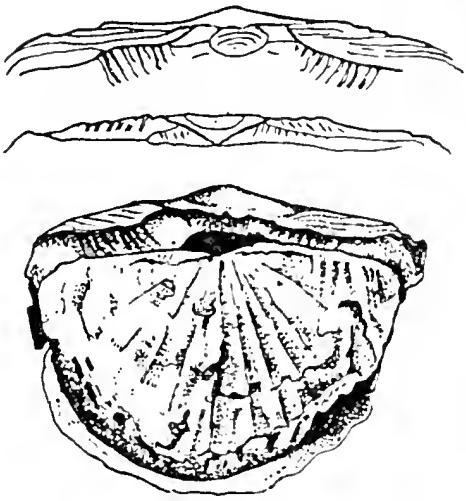


FIG.31. *Pycnodonte*, x0.3
Cret.- Miocene

FIG.32. *Camptonectes*, x0.4
Juras.- Cret.

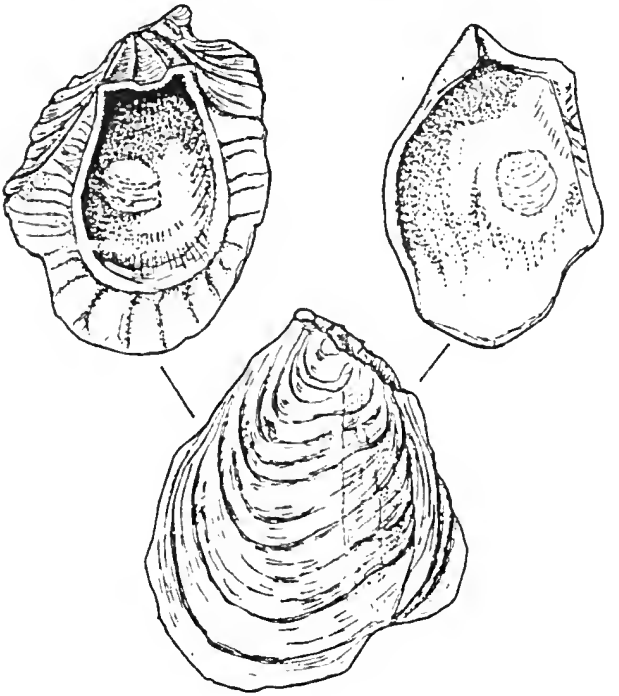


FIG.33. *Notostrea*, x1, Paleoc.- Oligoc.

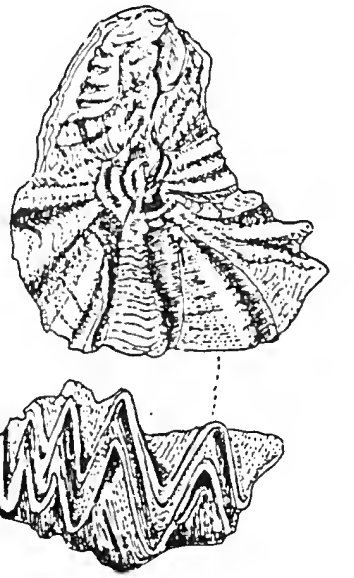


FIG.34. *Lopha*, x0·5, Trias.- Rec.

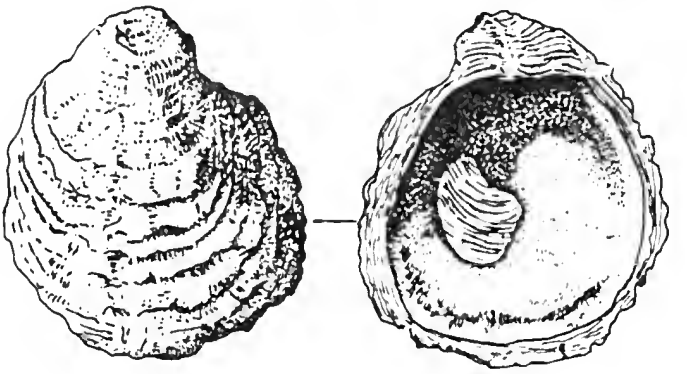


FIG.35. *Ostrea*, x0·5, Cret.- Rec.

4. SUBCLASS PALAEOHETERODONTA

Shells equivalve, without gape, internally nacreous;ligament external; hinge with few teeth, diverging from below beaks, sometimes striate. Three Orders. Cambrian - Recent.

Cont...

BIVALVES (Cont.)

ORDER MODIOMORPHOIDA

As for the Subclass. A diverse, probably artificial grouping of Palaeozoic marine bivalves, possibly ancestral to various better-known groups. Four families. Cambrian - Permian.

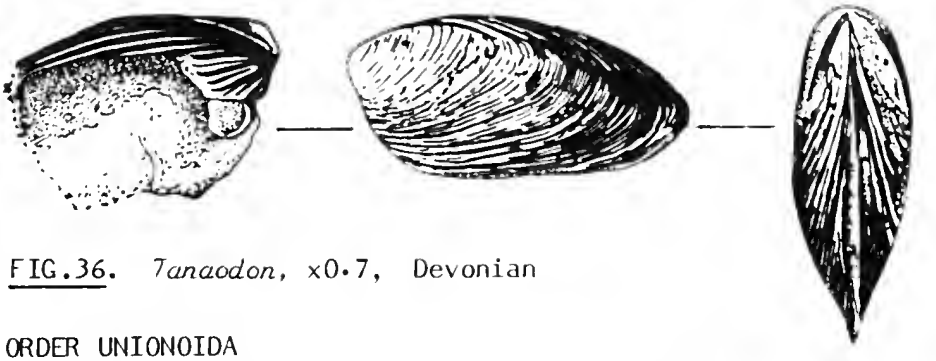


FIG.36. *Tanaodon*, x0·7, Devonian

ORDER UNIONOIDA

Shells inequilateral, of diverse form, internally nacreous; hinge with 2 cardinal teeth in LV, one in RV, with or without posterior lateral tooth; freshwater. 13 families. Devonian - Recent.

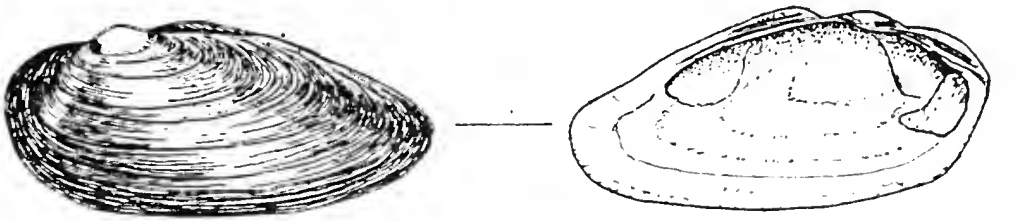


FIG.37. *Unio*, x0·7, Trias.- Rec.

ORDER TRIGONIOIDA

Shells equivalve, often shouldered or keeled posteriorly to form three principal surfaces (trigonal); smooth or elaborately sculptured, often in contrasting ways; hinge of strong radiate cardinals, often striate, internally nacreous; marine. Five families. Devonian - Recent.

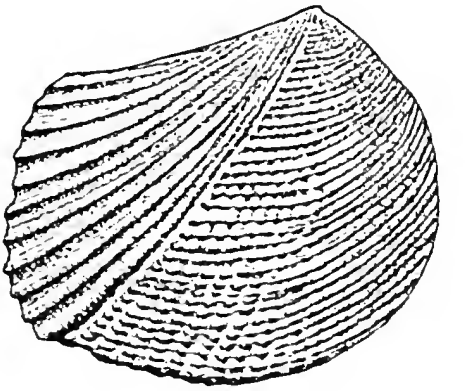


FIG.38. (right) *Eotrigonia*, x2, Oligoc.- Mioc.

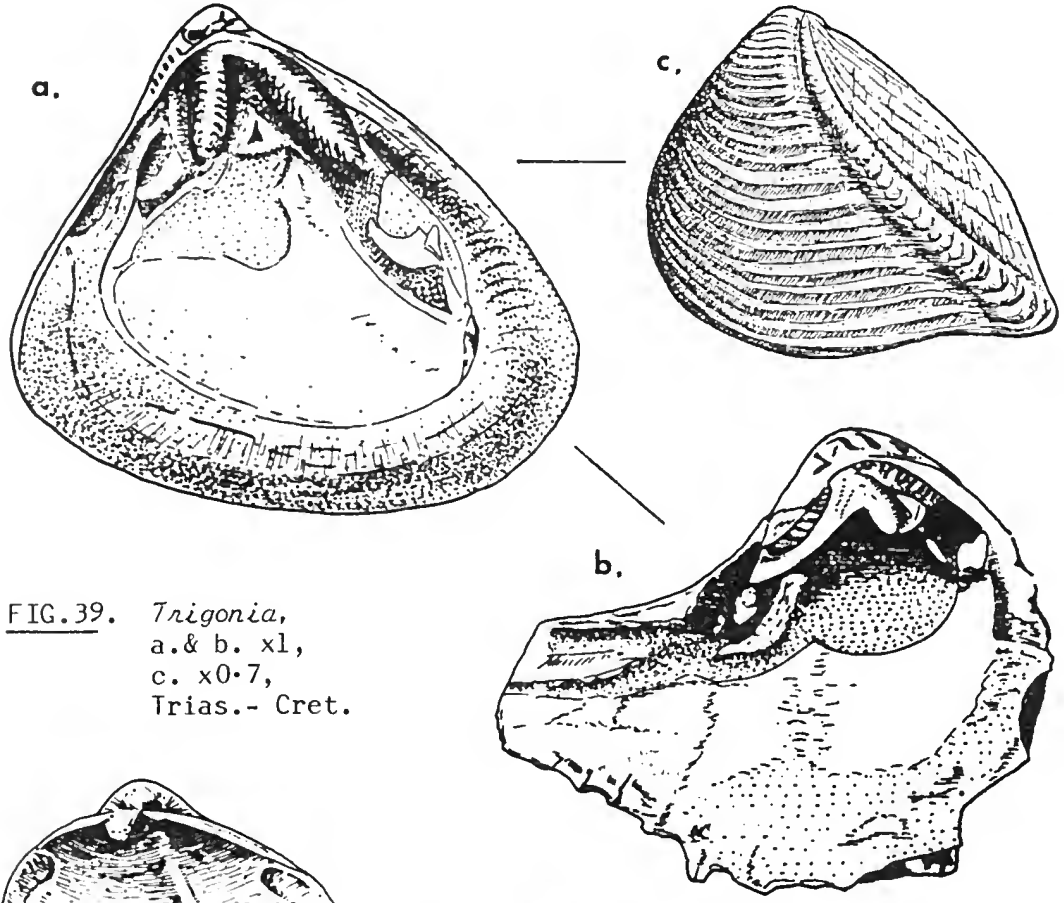


FIG.39. *Trigonia*, a.& b. x1, c. x0·7, Trias.- Cret.

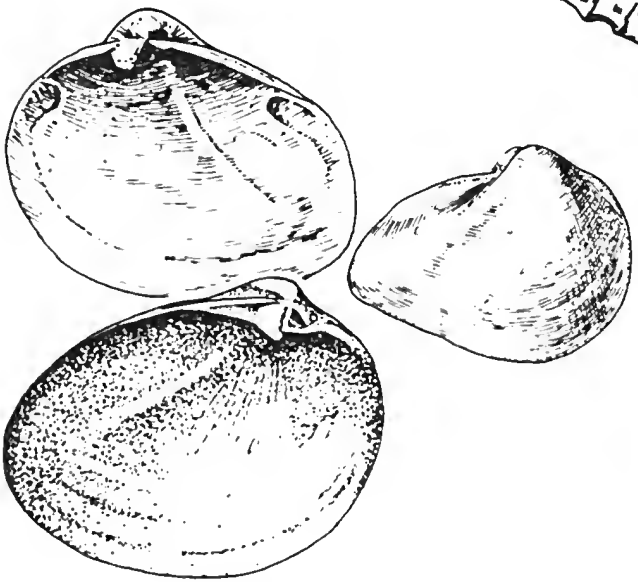


FIG.40. *Schizodus*, x1, Carb.- Perm.

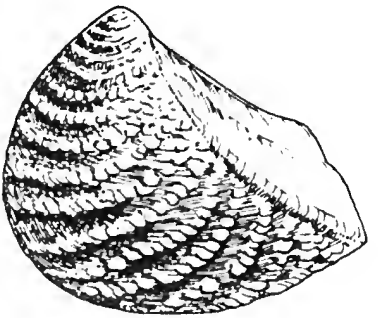


FIG.41. *Myophorella*, x1, Juras.- Cret.

Cont...

BIVALVES (Cont.)

5. SUBCLASS HETERODONTA

Shells often with a lunule and escutcheon; ligament located behind beaks; hinge usually with distinct cardinal and lateral teeth; never nacreous. Three Orders. Ordovician - Recent.

ORDER VENEROIDA

Shells usually equivalve with paired, sub-equal adductors; hinge of well-formed cardinal teeth, with or without laterals; where present, posterior laterals always behind ligament. Active burrowers or nestlers. Mostly marine. 69 families. Ordovician - Recent.

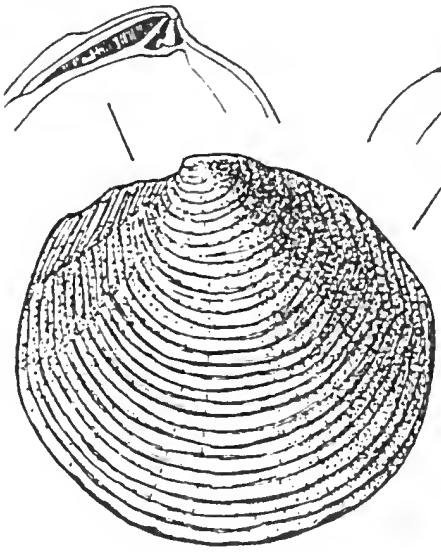


FIG.42. *Miltha*, x2, Cret.- Rec.

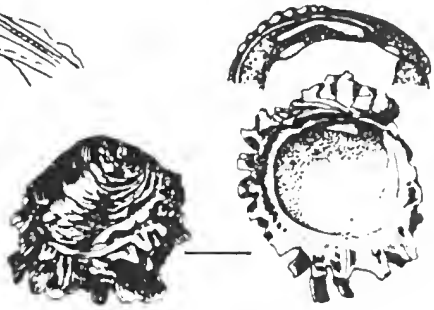


FIG.43. *Chama*, x0·5, Paleoc.- Rec.

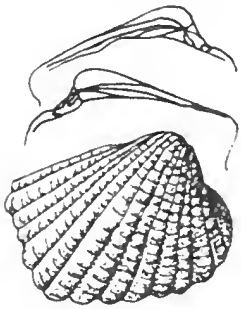


FIG.44.(left) *Glans*, x3, Paleoc.- Rec.

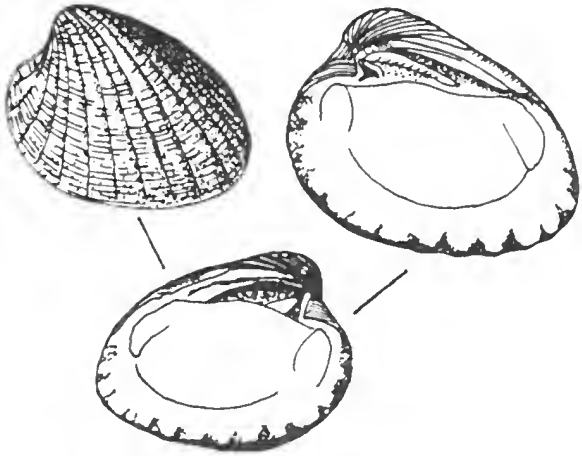


FIG.45. *Megacardita*, x0·5. Oligoc.- Rec.

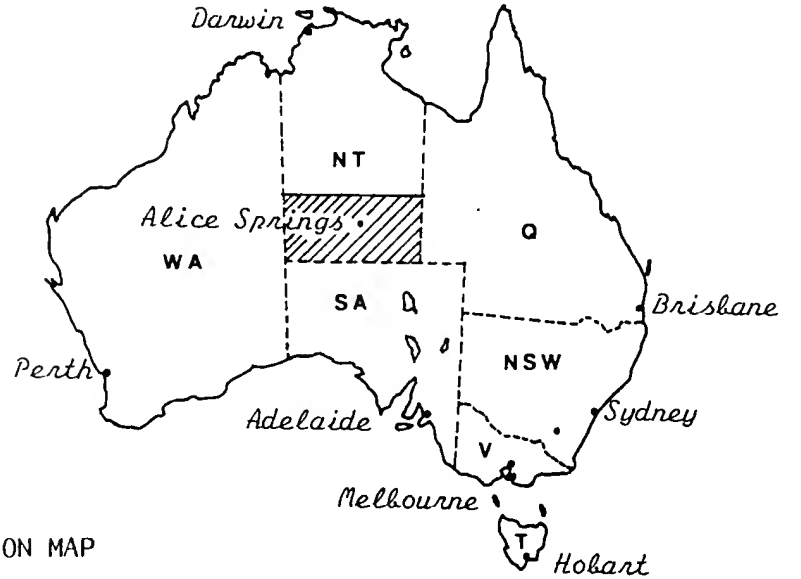
TO BE CONTINUED.

FOSSILS OF CENTRAL AUSTRALIA - AN OVERVIEW

by David Aslin.

In preparing this article on fossils from Central Australia, I have confined my research to the country between the South Australian/Northern Territory border and the 22nd parallel.

To the north and north-east of this area occur the faunas of Cambrian age, to the east and south-east the Cretaceous of the Great Artesian Basin and to the south, the largely Pre-Cambrian Officer Basin.



LOCATION MAP

The oldest sediments of this part of Central Australia form the Arunta Complex. These ancient rocks, older than 1,900 million years form most of the Musgrave Ranges.

The Heavitree Quartzite dated at between 800 and 900 million years is not known to contain fossils but ripple marks are preserved in many localities. This period of sand deposition was followed by a deposition of lime muds of the Bitter Springs Formation (700 to 800 m.y.). These beds contain the oldest recorded fossils in the Northern Territory, simple blue-green and green algae built up sedimentary piles known as stromatolites.

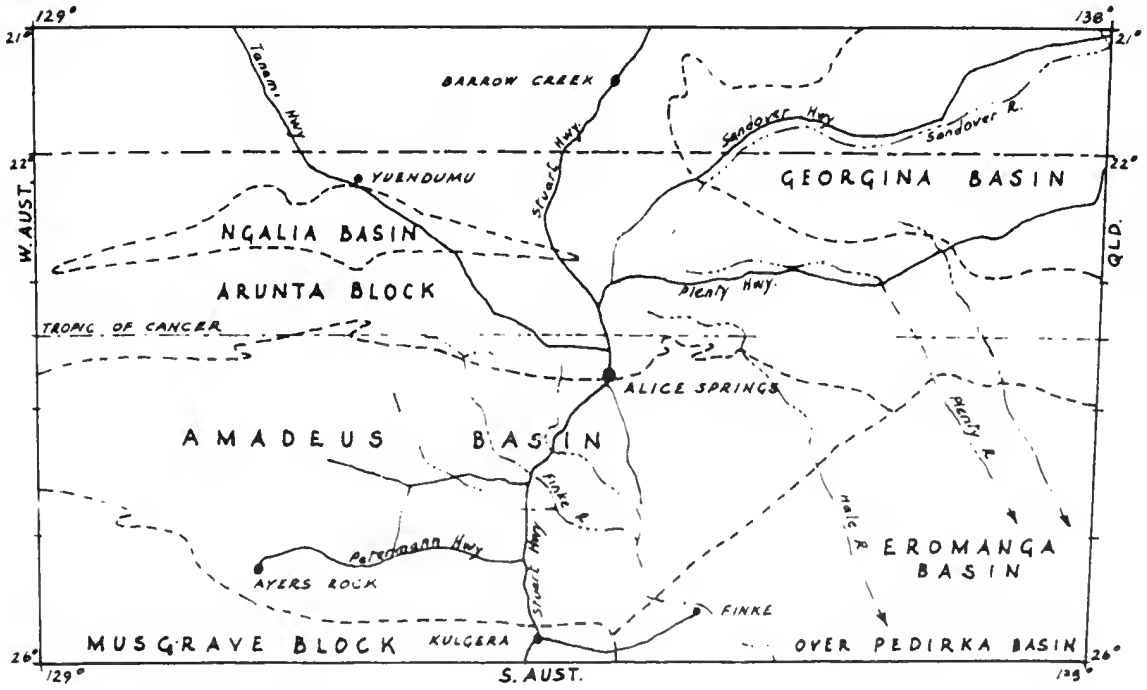
Between 700 and 650 million years ago a period of glaciation resulted in some of the earlier formations being eroded to form a tillite known as the Areyonga Formation. Fossils within these

Cont...

FOSSILS OF CENTRAL AUSTRALIA - AN OVERVIEW (Cont.)

conglomerates are therefore most likely derived from earlier beds. The warming up of the climate following the glaciation resulted in the sea again taking hold with a series of muds, sands and lime muds being laid down. This series includes the Pertatataka and Pertaknurra Formations (600-650 m.y.). It is from these formations that Chewings announced in 1914 the discovery of Cryptozoon (stromatolite) specimens south-east of Alice Springs at Acacia Well. The age of the species, which was named Cryptozoon australicum, caused a great deal of discussion in the early days of this Century when it was compared with Walcott's description of North American species. Apart from this fossil the only other organic remains recorded are worm casts and some obscure oval impressions. To date only trace fossils have been found in the Arumbera sandstone and Mt. Currie conglomerates.

In the Georgina Basin the latest Pre-Cambrian formation is the Central Mt. Stuart beds and in the Alcoota area two medusae are recorded, namely Hallidaya brueri and Skinnera brooksi (Wade 1969).



Geographic base of Central Australia showing boundaries of major structural units.

This brings us to the start of the Cambrian period and the abundance of fossils of this age to be found in Central Australia.

Part of the Georgina Basin with its Middle and Late Cambrian faunas of which the trilobite Xystridura is one form, extends into the north-east of the area under discussion.

Towards the beginning of the Cambrian the central core of the area, namely the Arunta Block, was flanked by basins. To the north the Ngalia and Georgina Basins and in the south the Amadeus Basin.

The Mt. Stuart beds were followed in the Lower to Middle Cambrian by the Sandover Beds which are noted for their various trilobite faunas including the genera Xystridura, Ptychagnostus, Pagetia and Peronopsis.

Near Huckitta, the contemporary formation is the Arthur Creek Beds. The rich fauna of these beds still requires a complete description, however several trilobite zones have been identified e.g., the Dinesus-Xystridura, Ptychagnostus and Leiopyge zones, which indicate a Mid Cambrian age.

The upper Cambrian sequences in the Northern Territory section of the Georgina Basin include the Meeta and Tomahawk Beds as well as the Arrinthrunga and part of the Ninmaroo Formation. The latter and the Tomahawk Beds have yielded trilobites, pelecypods, brachiopods and rostroconchs.

There is still considerable work to be done on the faunas of the Cambrian Formations of the Georgina Basin, the literature published to date being sketchy in many areas.

As previously mentioned, the other major sequence of Cambrian rocks in the Northern Territory occurs in the Amadeus Basin. The Pertaoorta Group is the main group of sediments in the Amadeus Basin. One of the early units, the Todd River dolomite contains numerous archaeocyatha such as Aldanocyathus, Coscinocyathus and Dictyocyathus as well as trilobites, brachiopods, hyolithids and problematica. Above the Todd River Dolomite is the Chandler Limestone then the Giles Creek Dolomite which includes the same group of fossils listed above as well as the trilobite Redlichia, the algae Girvanella and gastropods. Other beds in the group contain Salterella (?), stromatolites and molluscs.

Following the upper Cambrian sequences in the Georgina Basin and associated areas, the main Ordovician Formations are the Ninmaroo, Coolibah and Mithaka Formations. The latter formation contains some fine examples of ichnofauna including large trilobite resting

Cont...

FOSSILS OF CENTRAL AUSTRALIA - AN OVERVIEW (Cont.)

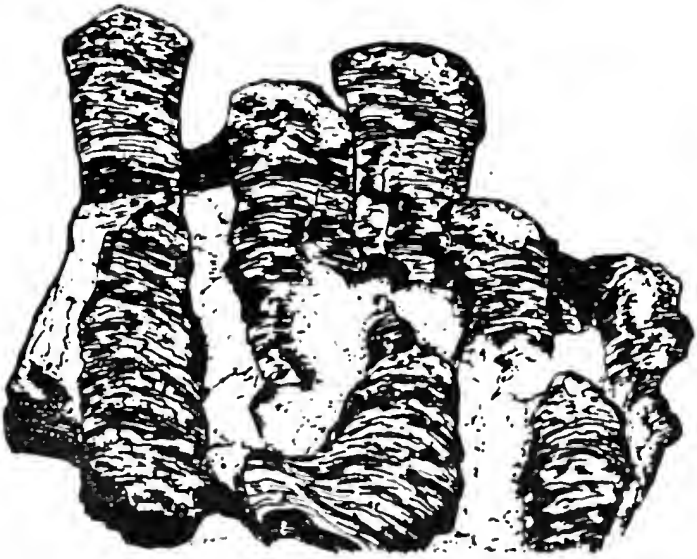
places (Rusophycus). The total faunas include trilobites, some exceeding 30 cms in length, conodonts, pelecypods, large nautiloid cephalopods, gastropods, articulate and inarticulate brachiopods, bryozoans, sponge spicules, ostracods, chitinozoans, receptaculitids and fish remains. The Rusophycus occur in the thinner bedded sandstones of this group.

The Ninmaroo Formation includes trilobites, ribeirioids and brachiopods in the lower beds and ribeirioids, brachiopods and gastropods in the upper beds. The Coolibah Formation includes a similar type of fauna to the above plus recordings of sponges and nautiloids.

Elsewhere Orthoceras and Raphistoma occur in the source areas of the Plenty and Sandover Rivers; Orthis and Isoarca occur along with trilobite fragments in the Huckitta area and Pleurotomaria at Mt. Ultim.

Once again the work on these faunas is limited, much remaining to be done before they can be fully understood.

In the Amadeus Basin, the Ordovician is better documented especially in regard to the major type areas. The entire sequence of sediments in this area is known as the Larapintine Series and comprises in ascending order, the Pacoota Sandstone



A group of stromatolites in strong relief by weathering (MacDonnell Ranges)

the Horn Valley Siltstone and the Stairway Sandstone. The Pacoota Formation is noted for Cruziana (trilobite burrows), Scolithos (vertical worm tubes) and various fossil trails. At one locality indiscriminate collecting has resulted in the best examples of Cruziana being badly defaced. It is to be hoped that the remaining specimens will be preserved by future collectors, amateur and professional alike for all to enjoy.

The Stairway Sandstone is known mainly for its ripple marked beds, tracks and trails as well as beautifully preserved Scolithos and the trilobites Annamitella, Carolinites and Prosopiscus.

The Horn Valley Siltstone is extensively fossiliferous at locations such as Tempe Downs, Ellery Creek, Mareenie Bluff, Petermann Creek and Finke Gorge.

Among those described or listed are :-

Brachiopods	: 2 species of Orthis
Pelecypods	: 7 species of Isoarca, 2 species of Palaearca Pteronites and Conocardium
Gastropods	: Raphistoma, Ophileta, Eunemia, Scalites (?), Pleurotomaria (?) and Murchisonia.
Cephalopods	: 5 species of Orthoceras, 2 species of Endoceras, Actinoceras, Trochoceras and Bathmoceras.
Trilobites	:2 species of Asaphus, Ampyx, Angelina (?) and Olenidia.
Echinoderms	: Crinoid ossicles only.
Zoantharians	: 2 indeterminate species of coral.

Tate, in his work, also referred to a specimen of the trilobite "Phacops", but this probably refers to a scutelluid or cheirurid species

In the Waterhouse Range, south of Alice Springs, the formation is rich in conodonts namely Oistodus and Paltodus among others.

The Ordovician is also noted for another important fossil discovery in the Northern Territory. Ritchie and Gilbert-Tomlinson 1977 described the first Ordovician vertebrates in the Southern Hemisphere. These were two new genera of agnathans, Arandaspis and Porophoraspis, preserved in sandstone as natural moulds of dermal armour. They were found in the Stairway Sandstone at Mt. Watt and Mt. Charlotte in the Amadeus Basin area. In the Devonian period further fish occur at several places in both the Amadeus and Georgina Basins. These locations are at Dulcie Range, Mithaka Waterhole, Toomba Range, Dare Plain and Gosses Bluff.

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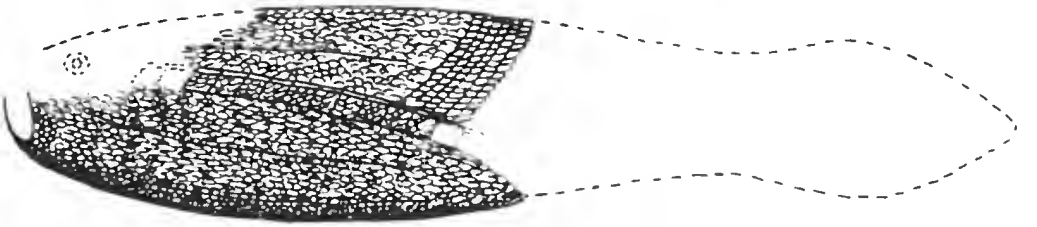
FOSSILS OF CENTRAL AUSTRALIA - AN OVERVIEW (CONT.)



Reconstruction of *Arandaspis prionolepis* (length est'd. 12-14cms). Provisionally interpreted as heterostracans, a group of agnathans. Stairway Sandstone, earliest Middle Ordovician. (Redrawn from A.Ritchie and J.Gilbert Tomlinson, 1977).

Both Bothriolepis and Phyllolepis fish faunas have been recorded from Central Australia by Gilbert-Tomlinson (1968) and Hills (1959). Although several good specimens are recorded, in most cases only bone fragments have been found.

The only other fossils in the Devonian sediments are those in conglomerates derived from rocks of Ordovician age.

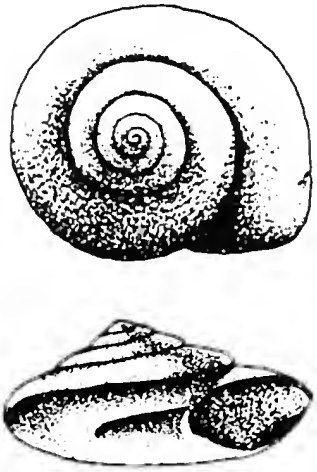
The next record of fossils in the area of Central Australia under review does not occur until the Triassic period when the Ngalia Basin north of Alice Springs was a series of lakes, probably the forerunner of the Lake Walloon area of the Jurassic. During the Jurassic, Lake Walloon invaded the Georgina Basin and the south-east portion of the Northern Territory. The plant fossil Otozamites is recorded from this period but the extent does not appear to be fully known.

The Cretaceous saw the formation of the Great Artesian Basin which extended into the south-east of the Northern Territory. In these sediments ammonites and belemnites comparable to those in northern South Australia were deposited, including genera such as Aconeceras, Sanmartinoceras, Boliteceras, Crioceras and Australiceras.

Tertiary fossils in Central Australia appear to be limited to freshwater and terrestrial forms.

One deposit at Mud Tank in the Strangways Range contains fossil snails. These have been found over the past few years but as yet their age and species have not been determined. They appear to be of Tertiary age having been deposited between one and two feet below the surface of gem bearing gravels.

Fossil wood is recorded in the Arltunga area, Paddys Hole Plain. The casts of Osmundaceous stems described from this area are considered to be of late Tertiary or Pleistocene but unfortunately the exact locality has been lost for some time and consequently more accurate dating is not possible.



Beds in the Arltunga area are capped by limestone containing species of gastropods resembling Planorbis hardmani. Other beds in the formation are of Pleistocene travertine in which small bivalves possibly Corbicula and unidentified tree limbs are found.

Raphistomina x2/3 (Ordovician).

Three localities containing Upper Cainozoic faunas have to date been recorded in the southern part of the Territory. The first of these, near Pulchera Waterhole in the Simpson Desert has produced the remains of a reptilian tooth and diprotodontid bones. These fossils were recovered from "gypsiferous" deposits in the area by staff of the Bureau of Mineral Resources.

The other two locations at Kangaroo Well in the Amadeus Basin and Alcoota in the Georgina Basin are both of Miocene age. The Kangaroo Well fauna (medial Miocene) consists of the gastropods Physastra and Meracomelon, Ostracoda, Testudines, Crocodilia, Aves and Macropodidae. Considerably more work has been done on the late Miocene Alcoota fauna (Woodburne 1967, Rich 1979 and others) which includes Reptilia: Testudines, Crocodylus sp, cf.Pallimnarchus. Aves: Dromaius sp., Dromornis, Ilbandornis, Anseriformes, Falconiformes and Phoenicopteriformes. Mammalia: Thylacinus potens, Pseudocheirops, Wakaleo alcootaensis, Vombatidae? Dorcopsoides, Hadronomas, Kolopsis, Plaisiodon, Pyramios and Palorchestes.

Work on the Central Australian fossil floras and faunas is as previously stated far from complete, considerably more work being required before a fully detailed picture of the fossils from this part of the Territory can be published.

Research is likely to be slow because the Territory does not

Cont...

FOSSILS OF CENTRAL AUSTRALIA - AN OVERVIEW (Cont.)

have the Tertiary Institutions found in the more populous parts of Australia.

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TAXATION INCENTIVES FOR THE ARTS SCHEME

The object of this scheme, which came into operation on the 1st January 1978, is to encourage donations of gifts in kind to the nation's public libraries, museums and art galleries by offering donors a taxation deduction. Donors must obtain at least two valuations for their gifts from approved valuers who are appointed by the Secretary to the Department of Home Affairs and Environment.

The average of the valuations obtained may be claimed as a tax deduction for the year in which the gift is made.

The range of material covered by the scheme is virtually only limited by the curating policies of the institutions concerned, consequently collections of such items as minerals, gemstones and fossils would be considered, provided an approved institution is prepared to accept the gift for its collections.

Further information about the scheme can be obtained from :-

The Secretary to the Committee on Taxation
Incentives for the Arts,
Department of Home Affairs and Environment,
G.P.O. Box 1252, CANBERRA, A.C.T., 2601.

Telephone (062) 467211

OVERSEAS COLLECTOR WISHING TO EXCHANGE

Carlos Tiago Alves of Rua Dr António Granjo 4 - 4º dº Algés, 1495, Lisboa, Portugal, wishes to exchange fossils with Australian collectors. He can offer Portugese trilobites, bivalves, ammonites, echinoids, crabs and shark's teeth as well as material from Spain, France and Morocco.

INFORMATION REQUIRED

Keith Whitthread would like information on micro fossils from Muddy Creek and Yulcart near Hamilton, Batesford Quarry, Geelong and Fossil Beach, Mornington.

Members who can assist should write to Keith C/o., Box 54, Ararat, Victoria 3377.

IN THE NEWS

Museum excited over fossil find.

The Western Australian Museum has released details of an "exciting" discovery of fossilised plants about 90km from Perth.

They were discovered at a new site being worked in the Darling Ranges but the precise area is being kept secret.

Museum Curator of Palaeontology, Dr. Ken McNamara, made the discovery. He said the age of the deposit is not known for certain but it is likely to be some tens of millions of years old. The find includes a large quantity of fossilised leaves and fruit.

He said previous localities had yielded remains of plants preserved in coarse sandstone but at the new site the plants were preserved in a very fine grained siltstone.

The site, on the top of a hill, was once a quiet backwater of a river or billabong. Leaves falling from trees overhanging the water settled into the silt and were slowly replaced by mineralising solutions as the silt hardened into rock.

The find includes a large variety of different plants. Some resemble eucalypts while others have parallel veined leaves and banksia-type leaves.

The Sunday Times, Western Australia, 3/6/84.

Catastrophe theory rocks evolution debate.

Extraordinary new theories about the evolution of life on Earth were published in scientific journals in Britain and the U.S.A. during March this year. They suggest that regularly once every 26 million years the earth is plunged into darkness for a million years as the Solar System is invaded by showers of comets. The comets kill off many of the plants and animals existing at the time.

Evidence from fossils and craters on the Earth's surface is being assembled to bolster the theory, however, sceptics claim that such evidence amounts to a statistical fluke. It is predicted that the next mass extinction will occur in 15 million years time.

The current controversy began last October when David Raup and John Sepkoski from the University of Chicago released details of their work on marine fossil families. Sepkoski has built up a compendium of fossils that have become extinct which lead the two Scientists to conclude that up to 95% of life on Earth has been wiped out on at least three occasions and on seven other occasions between 20% and 50% of species were wiped out.

Extract from New Scientist, 15th.March 1984.